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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/392,124	09/08/1999	DOUGLAS A. CHRISSAN	8X8S.239PA	9597

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EXAMINER

AZAD, ABUL K

ART UNIT	PAPER NUMBER
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2654

17

DATE MAILED: 11/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/392,124

Applicant(s)

CHRISSAN ET AL.

Examiner

ABUL K. AZAD

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. In view of the Reply Brief filed on August 18, 2003, PROSECUTION IS HEREBY REOPENED. Non-final Office action is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Drawings

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Figures 1 and 2 are identical to prior art figures 1 and 2A, 2B and 2C, here 2 is short form of Figures 2A, 2B and 2C from the patents 5,568,588. Therefore, these Figures must be labeled as "Prior art".

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the elements and steps of claims 1-32 must be shown or the feature(s) canceled from the claim(s).

The figures shown are duplicates of Figures 1, 2A, 2B and 2C from Patents 5,568,588. The applicant is required to provide drawings illustrating their invention and must show how it is different from the prior art. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-27 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bialik (US 5,568,588) in view of Adoul et al. (US 5,754,976).

As per claim 1, Bialik teaches, "in a speech processing system including a signal processor arrangement that analyzes an input speech signal and, in response,

generates the short-term characteristics of the input speech signal and a target vector, a method of analyzing the input speech signal comprising:

“generating from the target vector and the short term characteristics, a plurality of variable-amplitude pulses” (Fig. 1, element 10 a short term prediction analyzer, element 13 target vector generator, element 20 pulse location determiner and element 38 pulse which matches target vector; col. 4, lines 12-51, particularly reads on, “typically has a value of 3 separate gain levels . . . the gain level selector 24 receives the gain range produced by gain range determiner 22 and move through the gain values within the gain range. It output, on output line 32, is current gain level for which sequence of equal amplitude pulses to obtained”, from this statement it is clear that for each gain level the system will obtained a different amplitude of pulses; also teaches at col. 5, line 55 to col. 6, lines 27); and

“outputting a signal corresponding to a sequence of equal-amplitude pulses which, according to an error criterion, represents the target vector” (col. 6, lines 38-42, particularly reads on in step 76, target vector matcher 28 determines the value of global criterion GC_j for each gain level j ”, where previously teaches at col. 4, lines 12-42, that each gain level produces equal-amplitude pulses).

Bialik does not explicitly teach, sequences of variable-amplitude pulses and each of the sequence having a different average amplitude value. However, Adoul teaches, “generating from the target vector and the short term characteristics, a sequences of variable-amplitude pulses, each of the sequence having a different average amplitude value” (see encoding principle). Therefore, it would have been

obvious to one of ordinary skill in the art at the time of the invention to use Adoul's teaching in the invention of Bialik because Adoul teaches a very good performance can be achieved with variable-amplitude pulses without paying a heavy price (col. 10, lines 7-18).

As per claim 2, Bialik teaches, "wherein the target vector is matched using a perceptual weighting criterion" (col. 6, lines 42-44, particularly reads on "for such a criterion, target vector matched 28 includes a perceptual weighting filter").

As per claim 3, Bialik teaches, "a speech processing system including a signal processor arrangement that analyzes an input speech signal and, in response, generates the short-term characteristics of the input speech signal and a target vector, comprising:"

"means for generating from the target vector and the short term characteristics, a plurality of variable-amplitude pulses" (Fig. 1, element 10 a short term prediction analyzer, element 13 target vector generator, element 20 pulse location determiner and element 38 pulse sequence which matches target vector; col. 4, lines 12-51, particularly reads on, "typically has a value of 3 separate gain levels . . . the gain level selector 24 receives the gain range produced by gain range determiner 22 and move through the gain values within the gain range. It output, on output line 32, is current gain level for each sequence of equal amplitude pulses to obtained", from this statement it is clear that for each gain level the system will obtained a different amplitude of pulses; also teaches at col. 5, line 55 to col. 6, lines 27); and

"means for outputting a signal corresponding to a sequence of equal-amplitude pulses which, according to an error criterion, represents the target vector" (col. 6, lines 38-42, particularly reads on in step 76, target vector matcher 28 determines the value of global criterion GC_j for each gain level j ", where previously teaches at col. 4, lines 12-42, that each gain level produces equal-amplitude pulses).

Bialik does not explicitly teach, sequences of variable-amplitude pulses and each of the sequence having a different average amplitude value. However, Adoul teaches, "generating from the target vector and the short term characteristics, a sequences of variable-amplitude pulses, each of the sequence having a different average amplitude value" (see encoding principle). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Adoul's teaching in the invention of Bialik because Adoul teaches a very good performance can be achieved with variable-amplitude pulses without paying a heavy price (col. 10, lines 7-18).

As per claim 4, Bialik teaches, "wherein the target vector is matched using a perceptual weighting criterion" (col. 6, lines 42-44, particularly reads on "for such a criterion, target vector matched 28 includes a perceptual weighting filter").

As per claim 5, Bialik teaches, "a speech processing system including a signal processor arrangement that analyzes an input speech signal and, in response, generates the short-term characteristics of the input speech signal and a target vector, comprising:"

"an analyzer adapted to receive the target vector and the short term characteristics and to generate a plurality of variable-amplitude pulses" (Fig. 1, element

10 a short term prediction analyzer, element 13 target vector generator, element 20 pulse location determiner and element 38 pulse sequence which matches target vector; col. 4, lines 12-51, particularly reads on, "typically has a value of 3 separate gain levels . . . the gain level selector 24 receives the gain range produced by gain range determiner 22 and move through the gain values within the gain range. It output, on output line 32, is current gain level for each sequence of equal amplitude pulses to obtained", from this statement it is clear that for each gain level the system will obtained a different amplitude of pulses; also teaches at col. 5, line 55 to col. 6, lines 27);

"the analyzer being further adapted to output a signal corresponding to a sequence of equal-amplitude pulses which, according to an error criterion, represents the target vector" (col. 6, lines 38-42, particularly reads on in step 76, target vector matcher 28 determines the value of global criterion GC_j for each gain level j ", where previously teaches at col. 4, lines 12-42, that each gain level produces equal-amplitude pulses).

Bialik does not explicitly teach, sequences of variable-amplitude pulses and each of the sequence having a different average amplitude value. However, Adoul teaches, "generating from the target vector and the short term characteristics, a sequences of variable-amplitude pulses, each of the sequence having a different average amplitude value" (see encoding principle). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Adoul's teaching in the invention of Bialik because Adoul teaches a very good performance can be achieved with variable-amplitude pulses without paying a heavy price (col. 10, lines 7-18).

As per claim 6, Bialik teaches, "wherein the target vector is matched using a perceptual weighting criterion" (col. 6, lines 42-44, particularly reads on "for such a criterion, target vector matched 28 includes a perceptual weighting filter").

As per claim 7, Bialik teaches, "a speech processing system including a signal processor arrangement that analyzes an input speech signal and, in response, generates the short-term characteristics of the input speech signal and a target vector, comprising:"

"a multi-pulse analyzer adapted to receive the target vector and the short term characteristics and to generate a plurality of variable-amplitude, variable-sign and variably-spaced pulses, each of said pulses having variable amplitudes and variable signs" (Fig. 1, element 10 a short term prediction analyzer, element 13 target vector generator, element 20 pulse location determiner and element 38 pulse sequence which matches target vector; col. 4, lines 12-51, particularly reads on, "typically has a value of 3 separate gain levels . . . the gain level selector 24 receives the gain range produced by gain range determiner 22 and move through the gain values within the gain range. It output, on output line 32, is current gain level for each sequence of equal amplitude pulses to obtained", from this statement it is clear that for each gain level the system will obtained a different amplitude of pulses, so for out put of multiple gain levels of pulses will obtain a sequence of variable-amplitude; also teaches at col. 5, line 55 to col. 6, lines 27; also Bialik teaches, "the pulse sequence is series of positive and negative pulse sequence having the current gain");

“the multi-pulse analyzer being further adapted to output a signal corresponding to a sequence of equal-amplitude, variable-sign, variably-spaced pulses which, according to a maximum likelihood criterion, most closely represents the target vector” (col. 6, lines 38-42, particularly reads on in step 76, target vector matcher 28 determines the value of global criterion GC_j for each gain level j ”, where previously teaches at col. 4, lines 12-42, that each gain level produces equal-amplitude pulses and variable-sign and variably-spaced pulses).

Bialik does not explicitly teach, sequences of variable-amplitude pulses and each of the sequence having a different average amplitude value. However, Adoul teaches, “generating from the target vector and the short term characteristics, a sequences of variable-amplitude pulses, each of the sequence having a different average amplitude value” (see encoding principle). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Adoul's teaching in the invention of Bialik because Adoul teaches a very good performance can be achieved with variable-amplitude pulses without paying a heavy price (col. 10, lines 7-18).

As per claim 8, Bialik teaches, “ wherein the target vector is matched using a perceptual weighting criterion” (col. 6, line 42-44, particularly reads on “for such a criterion, target vector matched 28 includes a perceptual weighting filter”).

As per claim 9, Bialik teaches, “wherein the pulse amplitude variations are based on at least one of the exponential function; a linear function; the short-term characteristics of the input speech signal; the long-term characteristics of the input speech signal; and the excitation signal from previous frames” (Fig. 5, elements 10, 12,

and col. 5, lines 1-15, impulse response is a function of short-term characteristics a_l provided along line 17 from analyzer 10").

As per claims 10-27, they are interpreted, thus rejected for the same reasons set forth in the rejection of claims 1-9.

As per claim 29, Bialik teaches, "wherein the pulse-train sequence modification function is based on a linear function" (col. 4, line 55 to col. 5, line 65, equation 2 is a linear function).

As per claim 30, Bialik teaches, "wherein the pulse-train sequence modification function is based on the short-term characteristics of the input speech signal" (col. 4, lines 55-65, short-term characteristic).

As per claim 31, Bialik teaches, "wherein the pulse-train sequence modification is based on the long-term characteristics of the input speech signal" (col. 3, lines 41-48, long-term analyzer).

As per claim 32, Bialik teaches, "wherein the pulse-train sequence modification function is based on the excitation signal from previous frames" (col. 6, lines 11-18, reads on "in step 62, determiner 25 updates the local criterion with the previous pulse as follows equation 7").

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bialik et al. (US 5,568,588) in view of Adoul et al. (US 5,754,976) as applied to claim 25 above, and further in view of Sklar (Digital Communications Fundamentals and Application).

As per claim 28, Bialik in view of Adoul do not explicitly teach modifying the pulse train based on the exponential function. However, Sklar teaches, in the speech signal processing to use pulse trains constructed based on the exponential function (Page 63, equations 2.10 and 2.11). It would have been obvious to one of ordinary skill in the art at the time of the invention to use pulse-train sequence modification function is based on the exponential function because output speech quality is greatly increased, and perceptually smooth.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Abul K. Azad** whose telephone number is **(703) 305-3838**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richemond Dorvil**, can be reached at **(703) 305-9645**.

Any response to this action should be mailed to:

Commissioner for Patents

Washington, D.C. 20231

Or faxed to:

(703) 872-9314

(For informal or draft communications, please label "PROPOSED" or "DRAFT")

Art Unit: 2654

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center's Customer Service Office whose telephone number is **(703) 306-0377**.

Abul K. Azad

October 29, 2003



RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER